



(51) 国際特許分類6 B28B 1/26, C08J 9/28, B22F 3/22		A1	(11) 国際公開番号 WO97/07948
		(43) 国際公開日 1997年3月6日(06.03.97)	
(21) 国際出願番号 PCT/JP96/02368		(74) 代理人 弁理士 小山 有, 外(KOYAMA, Yu et al.) 〒160 東京都新宿区四谷二丁目9番 四谷高木ビル2階 Tokyo, (JP)	
(22) 国際出願日 1996年8月26日(26.08.96)			
(30) 優先権データ 特願平7/254418 1995年8月26日(26.08.95) JP 特願平7/285445 1995年9月26日(26.09.95) JP		(81) 指定国 CN, JP, KR, US, 欧州特許 (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).	
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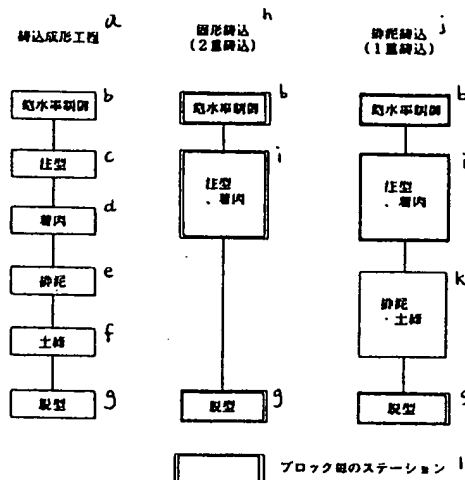
(54) Title: METHOD OF SLIP CASTING OF POWDERS, CASTING MOLD USED IN SAID METHOD, AND PROCESS FOR PRODUCING OPEN-CELL POROUS BODY USED IN SAID MOLD

(54) 発明の名称 粉体の鋳込成形方法及び鋳込成形に用いられる鋳込成形型、及び鋳込成形型に用いられる連続気孔多孔体の製造方法

7) Abstract

A method of slip casting using a casting mold provided with a water-absorbent layer that has a self-water-absorbent ability, substantially has a water resistance, and is controlled in the saturated water content, the slip casting being conducted by employing mainly a capillary sucking force as the driving force of cast formation. An open-cell porous body usable as the water-absorbent layer is produced by agitating a mixture comprising a compound having one epoxy ring in its molecule, a curing agent which cures the epoxy compound by reaction, a filler developing a self-water-absorbent ability and a mold release property, and water to prepare an O/W emulsion slurry and curing the slurry as such in a hydrous state.

- a ... Slip casting steps
- b ... Control of saturated water content
- c ... Casting
- d ... Cast formation
- e ... Draining
- f ... Fastening
- g ... Demolding
- h ... Solid casting (core casting)
- i ... Casting and cast formation
- j ... Drain casting (single casting)
- k ... Draining and fastening
- l ... Station for each block



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP96/02368

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl⁶ B28B1/26, C08J9/28, B22F3/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int. Cl⁶ B28B1/26, C08J9/28, B22F3/22

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1926 - 1996
Kokai Jitsuyo Shinan Koho	1971 - 1996
Toroku Jitsuyo Shinan Koho	1994 - 1996

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP, 5-185408, A (NGK Insulators, Ltd.), July 27, 1993 (27. 07. 93), Page 2, column 2, lines 32 to 42 (Family: none)	1-9, 11-13, 15-27, 51
Y	JP, 2-85103, U (INAX Corp.), July 3, 1990 (03. 07. 90), Claim; Fig. 1 (Family: none)	1-9, 11-13, 15-27, 51
Y	JP, 2-307707, A (Eagle Kogyo K.K.), December 20, 1990 (20. 12. 90), Claim (Family: none)	1-9, 11-13, 15-27, 51
Y	JP, 35-15690, B1 (NGK Insulators, Ltd.), October 19, 1960 (19. 10. 60), Page 1, right column, lines 18 to 21 (Family: none)	1-9, 11-13, 15-27, 51
Y	JP, 1-99801, A (NGK Insulators, Ltd.), April 18, 1989 (18. 04. 89), Claim; Fig. 2 & EP, 312322, B1 & US, 5013500, A & DE, 3888279, G	1-9, 11-13, 15-27, 51

☒ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

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- "P" document published prior to the international filing date but later than the priority date claimed

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Date of the actual completion of the international search

November 19, 1996 (19. 11. 96)

Date of mailing of the international search report

November 26, 1996 (26. 11. 96)

Name and mailing address of the ISA/

Authorized officer

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP96/02368

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP, 1-180307, A (Toshiba Corp.), July 18, 1989 (18. 07. 89), Claim; page 3, lower left column, 9th line from the bottom to last line; Fig. 1	1-9, 11-13, 15-27, 51
Y	JP, 60-154004, A (Izumiyama Seido K.K.), January 24, 1984 (24. 01. 84), Claim (Family: none)	1-9, 11-13, 15-27, 51
Y	JP, 1-141002, A (Toyota Motor Corp.), November 27, 1987 (27. 11. 87), Claim (Family: none)	1-9, 11-13, 15-27, 51
Y	JP, 62-42805, A (NGK Insulators, Ltd.), February 24, 1987 (24. 02. 87), Claim (Family: none)	1-9, 11-13, 15-27, 51
Y	JP, 61-297103, A (Cataler Industrial Co., Ltd.), December 27, 1986 (27. 12. 86), Claim (Family: none)	1-9, 11-13, 15-27, 51
Y	JP, 51-47903, A (INAX Corp.), April 24, 1976 (24. 04. 76), Claim (Family: none)	1-9, 11-13, 15-27, 51
Y	JP, 1-131508, U (INAX Corp.), September 6, 1989 (06. 09. 89), Claim; Fig. 1 (Family: none)	4, 16
Y	JP, 1-244806, A (Shinto Kogyo K.K.), September 29, 1989 (29. 09. 89), Page 3, upper left column, lines 9 to 13 (Family: none)	4
Y	JP, 55-128411, A (Yamaki Denki K.K.), October 4, 1980 (04. 10. 80), Claim (Family: none)	4
Y	JP, 1-186303, A (Toyota Motor Corp.), July 25, 1989 (25. 07. 89), Page 2, lower left column, 4th line from the bottom to lower right column, line 4 (Family: none)	6, 11
Y	JP, 60-183104, A (Harima Taika Renga K.K.), September 18, 1985 (18. 02. 85), Claim (Family: none)	6, 11
Y	JP, 3-62526, B (Shiki Roll K.K.), September 26, 1991 (26. 09. 91), Page 4, column 8, lines 35 to 43 (Family: none)	7-9, 47
Y	JP, 1-222901, A (TOTO Ltd.), September 6, 1989 (06. 09. 89)	7-9, 16

INTERNATIONAL SEARCH REPORT

International application No.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	right column, line 13 (Family: none)	
Y	JP, 49-45108, A (K.K. Koransha), April 30, 1974 (30. 04. 74), Page 2, upper left column, 4th line from the bottom to upper right column, line 7 (Family: none)	7 - 9
Y	JP, 4-334402, A (INAX Corp.), November 20, 1992 (20. 11. 92), Page 3, column 4, lines 25 to 29, column 4, lines 42 to 47 (Family: none)	7 - 9
Y	JP, 62-9910, A (Toyota Motor Corp.), January 17, 1987 (17. 01. 87), Claim (Family: none)	7 - 9
Y	JP, 60-92806, A (Hitachi, Ltd.), May 24, 1985 (24. 05. 85), Page 5, upper left column, 8th line from the bottom to lower left column, line 5 & EP, 140682, A & CN, 8510420, A	7 - 9
Y	JP, 58-18207, B (Asahi Glass Co., Ltd.), April 12, 1983 (12. 04. 83), Page 3, column 6, lines 21 to 33; page 4, column 8, lines 1 to 4 & DE, 2606291, A & FR, 2301348, A & GB, 1533481, A & US, 4160003, A	16
Y	JP, 63-202407, A (INAX Corp.), August 22, 1988 (22. 08. 88) (Family: none)	24
Y	JP, 63-310776, A (NKK Corp.), December 19, 1988 (19. 12. 88), Page 3, lower left column, line 2 to upper right column, last line (Family: none)	25 - 26, 54 - 55
Y	JP, 5-345835, A (TOTO Ltd.), December 27, 1993 (27. 12. 93), Claim (Family: none)	16, 27-37, 39-47, 51-55
Y	JP, 62-26657, B (TOTO Ltd.), June 10, 1987 (10. 06. 87), Claim (Family: none)	27-37, 39-47, 51-55
Y	JP, 5-54496, B (Saihachi Inoue), August 12, 1993 (12. 08. 93), Claim & EP, 194757, A & US, 4783489, A & US, 4818453, A & DE, 3679219, G	27-37, 39-47, 51-55
Y	JP, 5-39972, B (TOTO Ltd.), June 16, 1993 (16. 06. 93).	27-37, 39-47, 51-55

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International application No.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP, 53-2464, B (TOTO Ltd.), January 28, 1978 (28. 01. 78), Claim (Family: none)	27-37, 39-47, 51-55
Y	JP, 5-43733, A (TOTO Ltd.), February 23, 1993 (23. 02. 93), Claim & EP, 528071, B1 & NO, 9105009, A & CA, 2057938, C & FI, 9105968, A & TW, 203622, A & US, 5242635, A & CN, 1069744, A & KR, 9406194, B1 & DE, 69121100, E	27-37, 39-47, 51-55
Y	JP, 5-8936, B (TOTO Ltd.), February 3, 1993 (03. 02. 93), Claim & DE, 3730823, C & FR, 2603892, A & GB, 2196633, B & SE, 502303, B & US, 4828771, A & KR, 9004673, B & IT, 1222671, B & CA, 1317712, C	27-37, 39-47, 51-55
A	JP, 3-505750, A (Syn-Coat Enterprises, Inc.), December 12, 1991 (12. 12. 91), Claim & US, 4892891, A & EP, 372871, A & WO, 9006331, A & CA, 2004446, A	32
A	JP, 63-202407, A (INAX Corp.), August 22, 1988 (22. 08. 88), Claim & US, 4867662, A	33, 45, 46, 53
A	JP, 5-71623, B (Nitto Boseki Co., Ltd.), October 7, 1993 (07. 10. 93), Page 3, column 5, line 3 (Family: none)	35
A	JP, 3-53339, A (Hayakawa Gomu K.K.), August 14, 1991 (14. 08. 91), Page 2, column 3, 11th line to 8th line from the bottom (Family: none)	35
A	JP, 59-36141, A (Sekisui Chemical Co., Ltd.), February 28, 1984 (28. 02. 84), Claim (Family: none)	35
A	JP, 59-42698, B (Pentel Co., Ltd.), October 17, 1984 (17. 10. 84), Claim (Family: none)	35
A	JP, 49-124171, A (Kureha Chemical Industry Co., Ltd.), November 27, 1974 (27. 11. 74), Page 4, upper left column, lines 4 to 11 (Family: none)	35
Y	JP, 2-15364, B (TOTO Ltd.), April 11, 1990 (11. 04. 90), Claim (Family: none)	17-19, 43, 44

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP, 63-288705, A (INAX Corp.), November 25, 1988 (25. 11. 88), Claim (Family: none)	17-19, 45
Y	JP, 1-139505, U (INAX Corp.), September 25, 1989 (25. 09. 89), Claim; Fig. 1 (Family: none)	17-19, 45
Y	JP, 2-99606, U (INAX Corp.), August 8, 1990 (08. 08. 90) (Family: none)	17-19, 45